Michael J. Klug: SULFUR CYCLING IN FRESHMATER SEDIMENTS

Organic sulfur-containing compounds represent greater than 80 percent of the total sulfur in sediments of eutrophic freshwater lakes. Although sedimentary sulfur is predominantly in the form of organic compounds, more sulfur is transformed by sulfate reduction than by any other process. Rates of sulfate reduction in these sediments average 7 mmol/m²/day. This rate is 19 times greater than the net rate of production of inorganic sulfur from organic compounds on an annual basis.

- Ingvorsen, K., Zeikus, J.G., and Brock, T.D., 1982. Dynamics of bacterial sulfate reduction in a eutrophic lake, Appl. Environ. Microbiol., 42:1029-1036
- Ivanov, M.V., 1983. The sulfur cycle in lakes and continental reservoirs. In *The Global Biogeochemical Sulphur Cycle*. (M.V. Ivanov and J.R. Treney, eds.), John Wiley and Sons, New York.
- King, G.M. and Klug, M.J., 1982. Comparative aspects of sulfur mineralization in sediments of a eutrophic lake basin, Appl. Environ. Microbiol., 43:1406-1412.
- Laanbroek, H.J. and Pfennig, N., 1981. Oxidation of short-chain fatty acids by sulfate-reducing bacteria in freshwater and marine sediments, Arch. Microbiol., <u>128</u>:330-335.
- Lovley, D.R. and Klug, M.J., 1982. Intermediary metabolism of organic matter in the sediments of a eutrophic lake, Appl. Environ. Microbiol., 43:552-560.
- Lovley, D.R. and Klug, M.J., 1983. Sulfate reducers can outcompete methanogens at freshwater sulfate concentrations, Appl. Environ. Microbiol., 45:187-192.
- Lovley, D.R., Dwyer, D.F., and Klug, M.J., 1982. Kinetic analysis of competition between sulfate reducers and methanogens in sediments, Appl. Environ. Micropiol., 43:1373-1379.
- Nriagar, J.O., 1968. Sulfur metabolism and sedimentary environment: Lake Mendota, Wisconsin, Limnol. Oceanog., 13:430-439.

- Smith, R.L. and Klug, M.J., 1981. Reduction of sulfur compounds in the sediments of a eutrophic lake basin, Appl. Environ. Microbiol., 41:1230-1237.
- Smith, R.L. and Klug, M.J., 1981. Electron donors utilized by sulfate-reducing bacteria in eutrophic lake sediments, Appl. Environ. Microbiol., 42:116-121.
- Winfrey, M.R. and Zeikus, J.G., 1977. Effect of sulfate on carbon and electron flow during microbial methanogenesis in freshwater sediments, Appl. Environ. Microbiol., 33:275-281.